

WHAT IS CLAIMED IS:

1. A signal-processing method for filtering a measurement data of a predetermined dimension, comprising:
 - 5 a measurement data input step for inputting the measurement data along a measurement path;
 - a selecting step for selecting a weighted spline filter formula in accordance with the type of the measurement data;
 - an initializing step for applying weight on the measurement data by a unit matrix
 - 10 to obtain an initial value of a spline filter output;
 - a weight-adjusting step for adjusting and determining the weight on the measurement data;
 - a spline filter output calculating step for calculating the spline filter output using the weight determined in the weight-adjusting step;
 - 15 a convergence test step for determining a convergence of the weight; and
 - an output step for outputting a signal-processing result based on the spline filter output,
 - wherein, when the weight is not judged converged in the convergence test step, the weight is updated and the weight-adjusting step and the spline filter output calculating step
 - 20 are repeated to conduct a robust spline filtering on the measurement data.
2. The signal-processing method according to claim 1, wherein the weight determined in the weight-adjusting step is less adjusted as a deviation of the measurement data from the spline curve calculated by the weighted spline filter formula becomes greater.
- 25 3. The signal-processing method according to claim 2, wherein the predetermined dimension of the measurement data includes two or more dimension components orthogonal with each other, and
- wherein the deviation of the measurement data is determined based on a sum of
- 30 squares of the respective dimension components.
4. The signal-processing method according to claim 1, wherein the weight is judged

converged when a change in the weight determined in the weight-adjusting step becomes a predetermined value or less in the convergence test step.

- 5 5. The signal-processing method according to claim 1, the output step comprising:
 a weight-updating step for updating the weight to 1 when the weight of the
 measurement data exceeds a predetermined value;
 a spline filter re-output calculating step for calculating the spline filter output
 based on the updated weight; and
 a signal-processing result output step for outputting the spline filter output in the
10 spline filter re-output calculating step as a signal-processing result.
6. The signal-processing method according to claim 1, wherein the predetermined
 dimension of the measurement data includes two or more dimension components
 orthogonal with each other, and
15 wherein the spline filter output is calculated based on the result of the weighted
 spline filtering for the respective components.
7. The signal-processing method according to claim 1, wherein the measurement data
 is inputted at a predetermined interval along the measurement path.
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8. The signal-processing method according to claim 1, further comprising a step of
 canceling a locally isolated outlier relative to the measurement data.
9. A signal-processing program, wherein the signal-processing method according to
25 claim 1 is executed by a computer.
10. A recording medium storing the signal-processing program according to claim 9.
11. A signal processor, wherein the signal-processing program according to claim 9 is
30 executed by a computer.